IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	Cross, Elisa M.	Confirmation No.:	6070
Serial No.:	10/017,268	Group Art Unit:	2629
Filed:	December 14, 2001	Docket No.:	57013US002
Title:	TOUCH PANEL SPACER DOTS AND METHODS OF MAKING		

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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September 18, 2007 /Ilene M. Van Houten/
Date Signed by: Ilene M. Van Houten

Dear Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed on August 2, 2007 appealing the final rejection of claims 1-18 and 52-56 in the above-identified application as set forth in the Final Office Action mailed May 3, 2007.

The U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No. 500471 in the amount of $500.00 for filing a Brief in Support of an Appeal as set forth under 37 C.F.R. § 41.20(b)(2). Please charge any required fees or credit any overpayment to Deposit Account No. 500471 at any time during the pendency of this application.

Appellant respectfully requests that the Board consider and reverse the Examiner's rejections of claims 1-18 and 52-56.

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REAL PARTY IN INTEREST

The intellectual property embodied in the pending application is assigned to 3M Innovative Properties Company, a Delaware Corporation doing business in Saint Paul, Minnesota.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant that will have a bearing on the Board's decision in the present Appeal.

STATUS OF CLAIMS

Claims 1-43, 49, and 52 -56 are pending in the application. Claims 19-43 and 49 have been withdrawn from consideration, and claims 44-48 and 50-51 have been cancelled. Claims 1-18 and 52-56 have been rejected and are the subject of the present appeal.

STATUS OF AMENDMENTS

No amendments to the claims were filed subsequent to the final rejections set forth in the Final Office Action mailed on May 3, 2007. The claims remain pending as previously presented in the response filed on January 29, 2007.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The subject matter of the pending independent claims relate to a method for making a touch activated user input device including a method of forming dots suitable as spacers in touch panels. Touch panel spacer dots experience repetitive forces over the lifetime of the touch panel. If the spacer dots fail, the functionality of the touch panel can fail. If spacer dots are not formed as intended (e.g., missing spacer dots, inconsistently sized or inconsistently placed spacer dots, etc.), the response of the touch panel may be non-uniform across the panel. Consequently, it is desirable to controllably form the touch panel spacer dots to be reliable, durable, and to have physical integrity with desirable optical properties.

A summary of independent claim 1 is provided with reference to the paragraph beginning at page 4, line 14, Figures 1-3, and with reference to the numerals associated therewith. One aspect provides a method for making a touch activated user input device 100, 200 including providing a first substrate 112, 210 having a first conductive coating 114, 220, and ink jet printing 240 a plurality of dots 116, 250 on the first conductive coating, where each of the dots includes nanoparticles (page 15, line 16 to page 16, line 16). The method additionally includes hardening the dots (page 6, lines 7-14) to form spacers 116, 230 adhered to the first substrate. The method additionally includes placing a second substrate 122 having a second conductive coating 124 over the first substrate such that the spacers maintain a distance H between the first and second substrates to prevent detection of a touch location when no external force is applied and allow detection of a localized touch location when a sufficient localized external force is applied between the first and second substrates.

A summary of independent claim 52 is provided with reference to the paragraph beginning at page 4, line 14, Figures 1-3, and with reference to the numerals associated therewith. One aspect provides a method for making a touch activated user input device 100, 200 including providing a first substrate 112, 210 having a first conductive coating 114, 220, and ink jet printing 240 a gel composition (e.g., Example 1, page 23, lines 20-24 and subsequent Examples) to define a plurality of dots 116, 250 on the first conductive coating. The method further includes hardening the dots (page 6, lines 7-14) to form spacers 116, 230 adhered to the first substrate. The method further includes placing a second substrate 122 including a second conductive coating 124 over the first substrate such that the spacers maintain a distance H between the first and second substrates to prevent detection of a touch location when no external force is applied and allowed detection of a localized touch location when a sufficient localized external force is applied between the first and second substrates.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Whether claims 1-7 and 15-18 are unpatentable under 35 U.S.C. § 103 over Matsuda et al., U.S. Patent No. 5,541,370 in view of Getz, U.S. Patent No. 6,627,918.

II. Whether claims 8-14 and 52-56 are unpatentable under 35 U.S.C. § 103(a) over Matsuda in view of Getz as applied to claim 1, and further in view of Sacripante et al., U.S. Patent No. 5,989,325.

ARGUMENT

I. The Applicable Law under 35 U.S.C. § 103

"Patent examiners carry the responsibility of making sure that the standard of patentability enunciated by the Supreme Court and by the Congress is applied in each and every case." MPEP §2141 (emphasis in the original). The Examiner bears the burden under 35 U.S.C. §103 in establishing a *prima facie* case of obviousness. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

Three criteria must be satisfied to establish a *prima facie* case of obviousness. First, the examiner must show that some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art would teach, suggest, or motivate one to modify a reference or to combine the teachings of multiple references. *In re Fine* at 1598. Second, the prior art can be modified or combined only so long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 231 USPQ 375, 379 (Fed. Cir. 1986). Third, the reference or combined references must teach or suggest all of the claim limitations. *In re Royka*, 180 USPQ 580 (CCPA 1974).

Patent Office policy is to follow *Graham v. John Deere Co.* in the consideration and determination of obviousness under 35 U.S.C. § 103. *MPEP § 2141.* Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966).

The test for obviousness under §103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *Interconnect Planning Corp. v. Feil*, 227 USPQ 543, 551 (Fed. Cir.

1985). A prior patent cited as a § 103 reference must be considered in its entirety, "*i.e.* as a *whole*, including portions that lead away from the invention." *Id.* That is, the Examiner must recognize and consider not only the similarities, but also the critical differences between the claimed invention and the prior art as one of the factual inquiries pertinent to any obviousness inquiry under 35 U.S.C. §103. *In re Bond*, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990) (emphasis added). Finally, the Examiner must avoid hindsight reasoning based upon reading the applicant's disclosure. *Id.*

There is no suggestion or motivation to make a proposed modification if the proposed modification would render the prior art invention to be unsatisfactory for its intended purpose. *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984); MPEP §2143.01 V.

Explicit disclosures in a cited reference that teach away from the purported combination cannot be ignored, as this an essential part of determining the scope and content of the prior art as required by *Graham v. John Deere*. A *prima facie* case of obviousness may be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

"[W]hen the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." *KSR Int'l Co. v. Teleflex, Inc.,* 127 S. Ct. 1727, 1737; 82 USPQ2d 1385, 1395 (citing to United States v. Adams, 383 U.S. 39, 51-52; 148 USPQ 479).

Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. 82 USPQ2d at 1396 citing to *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329 (Fed. Cir. 2006).

An applicant is entitled to a patent grant if any one of the elements of a *prima facie* case of obviousness is not established. The Federal Circuit has endorsed this view in stating: "If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent." *In re Oetiker*, 24 USPQ2d 1443, 1448 (Fed. Cir. 1992).

II. Matsuda Teaches Away From Combination with Getz

The Examiner in the Final Office Action mailed on May 3, 2007 at pages 2-3 interprets Matsuda to disclose ink jet printing dots on a first conductive coating and interprets Getz as disclosing a nanocomposite including nanoparticles. The Examiner concludes at page 3 that it would have been obvious to employ the nanoparticles disclosed by Getz in the process of Matsuda to arrive at the claimed limitations of independent claim 1. Appellant's position is that the solvent spraying system of dot formation disclosed in Matsuda teaches away from combination with the formation of dots using a paste in a conventional screen printing process as disclosed in Getz.

The scope and content of Matsuda relates to a writing pad including two substrates each having electrodes formed on a surface in such a way that the respective electrodes face one another across a predetermined gap. *Abstract.* The gap is defined by insulating dot spacers fixed at regular intervals, which Matsuda discloses at column 6, lines 20-44 to be formed by spraying an organic solvent including a resin dissolved in the solvent. Matsuda provides between column 11 and column 16 eleven examples each including spraying a solution including about 960 parts by weight solvent and about 40 parts by weight solids. This 4% by weight solids solution is sprayed from a distance of about 1 meter toward the electrode surface for about 1 minute. (*See, e.g.,* Example 1 at column 11, lines 20-26). **Consequently, every example disclosed by Matsuda includes spraying a solvent solution having only about 4% by weight solids**.

In contrast, Getz provides a spacer dot paste including about 89% by weight solids (118 grams of solids in about 14 grams of distilled water) that is silkscreen printed (i.e., surface transfer printed) in a conventional manner (column 4, line 38) onto a substrate. Spraying a solvent solution over a distance of about 1 meter toward an electrode surface as disclosed by Matsuda is incompatible with the conventional transfer coating/silkscreen printing of a paste as disclosed by Getz.

An essential part of determining the scope and content of the prior art under *Graham v. John Deere* requires that the explicit disclosures in Matsuda and Getz not be ignored. The explicit disclosures quoted from Matsuda and Getz above teach away from the Examiner's purported combination of these references. Thus, a *prima facie* case of obviousness in rejecting

claims 1-18 and 52-56 under 35 U.S.C. § 103 over Matsuda in view of Getz has not been established.

III. The Purported Combination Offers No Reasonable Expectation of Success

The solvent-based system of Matsuda sprays a low boiling point solvent (an alcohol as disclosed at column 6, lines 31-34) containing about 4% solids. Getz discloses the conventional screen printing of a paste that is about 89% by weight solids. Thus, one of skill in the art would not have a reasonable expectation of success in modifying the 4% solids alcohol-based spraying system of Matsuda to include the 89% solids paste of Getz.

In addition, Matsuda discloses at column 6, lines 50-55 the use of inorganic particles. In contrast, Getz discloses at column 2, lines 65-67 the use of organic-inorganic nanocomposites (Nanomeres ®). There is no evidence on the record to support a conclusion that one of skill in the art would have a reasonable expectation of success in modifying the solvent system of Matsuda employing inorganic particles to include the organic-inorganic nanocomposites that are carried in a paste as disclosed by Getz. Thus, a *prima facie* case of obviousness in rejecting claims 1-18 and 52-56 under 35 U.S.C. § 103 over Matsuda in view of Getz has not been established.

IV. The References Fail To Teach/Suggest All Claim Limitations

Under the tenets of *Graham* the differences between the cited art and the claims at issue must be ascertained. Each of independent claim 1 and independent claim 52 requires **ink jet printing** a plurality of dots on a first conductive coating. Matsuda discloses spraying a solvent solution from a distance of about 1 meter onto an electrode surface for a time of about 1 minute. Getz discloses silkscreen printing a paste having high solids content (about 89%). There is no evidence or suggestion in either Matsuda or Getz of a method for making a touch activated user input device including **ink jet printing** a plurality of dots on a first conductive coating, as required by each independent claim. Neither reference, taken alone or in combination, teaches or suggests this patentably distinct limitation.

Independent claim 1 further requires that each of the dots include nanoparticles. The Examiner concedes in the Final Office Action mailed May 3, 2007 at page 3, lines 6-7 that Matsuda does not teach nanoparticles. The Examiner interprets Getz to disclose the use of nanoparticles at column 2, line 65 through column 3, line 16. Appellant disagrees. Matsuda discloses at column 6, lines 50-55 the use of inorganic particles. In contrast, Getz discloses at column 2, lines 65-67 that: "The spacer dots 30 preferably consist of organic-inorganic nanocomposites (Nanomeres®)". Appellant's position is that there is no basis in the evidence for asserting that the inorganic compound particles of Matsuda are interchangeable or can be replaced with the organic-inorganic naoncomposites of Getz. Consequently, the cited references fail to teach or suggest the additional claim limitation of independent claim 1 where each of the dots includes nanoparticles.

Independent claim 52 requires ink jet printing a gel composition to define a plurality of dots on a first conductive coating. The Examiner concedes in the Final Office Action mailed May 3, 2007 at page 5 that Matsuda and Getz fail to teach ink jet printing a gel composition. The Examiner concludes that it would have been obvious to one of ordinary skill in the art to include a gel composition as disclosed by Sacripante with Matsuda as modified by Getz to arrive at the limitation of independent claim 52. Appellant disagrees.

Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. Sacripante discloses in the *Abstract* and at column 7, lines 13-15 an ink including a vehicle having about 10% solids to about 90% solids and a gelling compound. Consistent with the argument above, there is no evidence on the record of an articulated reason to modify the solvent system of Matsuda employing inorganic particles to include the organic-inorganic nanocomposite paste of Getz, much less a further modification that includes the gelling compound of Sacripante. Thus, limitation of independent claim 52 that requires ink jet printing a gel composition is believed to be non-obvious over the cited references.

A *prima facie* case of obviousness in rejecting claims 1-18 and 52-56 under 35 U.S.C. § 103 has not been established since Matsuda teaches away from combination with Getz, and

modifying Matsuda in view of Getz has no reasonable expectation of success. The purported combination of Matsuda and Getz with Sacripante fails to cure the defects in the *prima facie* case of obviousness.

Thus, a *prima facie* case of obviousness in rejecting claims 8-14 and 52-56 under 35 U.S.C. § 103(a) over Matsuda in view of Getz as applied to claim 1, and further in view of Sacripante, has not been established.

CONCLUSION

In view of the above, Appellant asserts that a *prima facie* case of obviousness has not been established over Matsuda in view of Getz, or over Matsuda in view of Getz and further in view of Sacripante. It is believed that claims 1-18 and 52-55 recite patentable subject matter over the cited references, such that all rejections to the claims have been overcome. Thus, Appellant respectfully requests that the Board reverse the rejections to claims 1-18 and 52-55.

Any inquiry regarding this Appeal Brief to the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office should be directed to Steven Bern at Telephone No. (651) 733-2255, Facsimile No. (651) 736-3833. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,
Elisa M. Cross
By their attorneys,

Dated: September 18, 1007
NRB: imv

/Nick Baumann/
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CLAIMS APPENDIX

1. (Previously Presented) A method for making a touch activated user input device comprising:

providing a first substrate comprising a first conductive coating;

ink jet printing a plurality of dots on the first conductive coating, each of the dots including nanoparticles;

hardening the dots to form spacers adhered to the first substrate; and

placing a second substrate comprising a second conductive coating over the first substrate such that the spacers maintain a distance between the first and second substrates to prevent detection of a touch location when no external force is applied and allow detection of a localized touch location when a sufficient localized external force is applied between the first and second substrates.

2. (Original) The method of claim 1, wherein the dots comprise a nanocomposite comprising surface-modified inorganic nanoparticles.

3. (Original) The method of claim 2, wherein the surface-modified inorganic nanoparticles include silica nanoparticles.

4. (Original) The method of claim 2, wherein the nanoparticles are present in an amount of about 5% or more by weight of the nanocomposite.

5. (Original) The method of claim 2, wherein the nanoparticles are present in an amount of about 10% to 40% by weight of the nanocomposite.

6. (Original) The method of claim 2, wherein the nanoparticles have an average diameter in a range of about 10 to 30 nm.

7. (Original) The method of claim 2, wherein the nanocomposite further comprises hexanediol diacrylate.

8. (Original) The method of claim 1, wherein the step of ink jet printing a plurality of dots comprises ink jet printing a heated gel composition.

9. (Original) The method of claim 8, wherein the gel composition comprises a nanocomposite gel.

10. (Original) The method of claim 9, wherein the nanocomposite gel composition comprises surface-modified silica nanoparticles dispersed in an energy curable fluid vehicle.

11. (Original) The method of claim 10, wherein the energy curable fluid vehicle comprises hexanediol diacrylate.

12. (Original) The method of claim 10, wherein the silica nanoparticles are present in an amount of about 5% or more by weight of the nanocomposite gel.

13. (Original) The method of claim 10, wherein the silica nanoparticles are present in an amount of about 10% to 40% by weight of the nanocomposite gel.

14. (Original) The method of claim 10, wherein the silica nanoparticles have an average diameter of about 10 to 30 nm.

15. (Original) The method of claim 1, wherein the first and second conductive coatings each comprise a transparent conductive coating.

16. (Original) The method of claim 1, wherein the spacer dots have heights of about 2 microns or more and have height to diameter aspect ratios of about 1:10 or more.

17. (Original) The method of claim 1, wherein the step of ink jet printing comprises ink jet printing a material onto a pre-existing dot.

18. (Original) The method of claim 1, further comprising associating the touch activated user input device with an electronic display.

19. (Withdrawn) A method for forming dots suitable as spacers in touch panels, which method comprises the steps of:

providing curable gel composition;

heating the gel composition to form a liquid composition;

ink jetting the liquid composition onto a transparent conductive coating to form a plurality of dots;

cooling the dots into a gel state; and

curing the dots to adhere the dots to the transparent conductive coating,

wherein the cured dots have heights of about 2 microns or more, and have height to diameter aspect ratios of about 1:10 or more.

20. (Withdrawn) The method of claim 19, wherein the curable gel composition comprises a nanocomposite.

21. (Withdrawn) The method of claim 20, wherein the nanocomposite comprises silica nanoparticles dispersed in a binder material.

22. (Withdrawn) The method of claim 21, wherein the binder material comprises an acrylate material.

23. (Withdrawn) The method of claim 19, wherein the transparent conductive coating comprises indium tin oxide.

24. (Withdrawn) A method for making touch panel spacer dots comprising:

printing a nanocomposite composition comprising surface-modified inorganic nanoparticles dispersed in an energy curable fluid vehicle to form a plurality of curable dots on a conductive coating; and

curing the curable dots to adhere the dots to the conductive coating.

25. (Withdrawn) The method of claim 24, wherein the step of printing the nanocomposite composition comprises ink jet printing.

26. (Withdrawn) The method of claim 25, wherein ink jet printing comprises heating the composition, ink jetting the heated composition, and cooling the ink jetted composition to form the plurality of curable dots.

27. (Withdrawn) The method of claim 24, wherein the step of printing the nanocomposite composition comprises screen printing.

28. (Withdrawn) The method of claim 24, wherein the nanocomposite composition comprises a nanocomposite gel composition.

29. (Withdrawn) The method of claim 24, wherein the nanocomposite composition comprises silica nanoparticles.

30. (Withdrawn) The method of claim 24, wherein the nanoparticles are present in an amount of about 5% or more by weight of the nanocomposite composition.

31. (Withdrawn) The method of claim 24, wherein the nanoparticles are present in an amount of about 10% to 40% by weight of the nanocomposite composition.

32. (Withdrawn) The method of claim 24, wherein the nanoparticles have an average size of about 10 to 30 nm.

33. (Withdrawn) The method of claim 24, wherein the nanocomposite further comprises hexanediol diacrylate.

34. (Withdrawn) The method of claim 24, wherein the conductive coating comprises a transparent conductive oxide.

35. (Withdrawn) The method of claim 34, wherein the transparent conductive oxide comprises indium tin oxide.

36. (Withdrawn) A method of making touch panel spacer dots comprising:

selecting a transparent conductive coating suitable for use in a touch panel;

formulating a curable gel composition capable of (i) being ink jet printed onto the transparent conductive coating to form a droplet on the transparent conductive coating that has a height to diameter aspect ratio of about 1:10 or more for droplets having height of about 2 to 10 microns or more, and (ii) adhering to the transparent conductive coating upon curing, without modifications to the transparent conductive coating.

37. (Withdrawn) The method of claim 36, wherein the curable gel composition comprises a nanocomposite gel composition.

38. (Withdrawn) The method of claim 37, wherein the nanocomposite gel composition comprises surface-modified silica nanoparticles dispersed in a binder.

39. (Withdrawn) The method of claim 38, wherein the binder comprises an acrylate material.

40. (Withdrawn) The method of claim 38, wherein the silica nanoparticles are present in an amount of about 5% or more by weight of the nanocomposite gel.

41. (Withdrawn) The method of claim 38, wherein the silica nanoparticles are present in an amount of about 10% to 40% by weight of the nanocomposite gel.

42. (Withdrawn) The method of claim 38, wherein the silica nanoparticles have average diameters of about 10 to 30 nm.

43. (Withdrawn) The method of claim 36, wherein selecting a transparent conductive coating comprises selecting an indium tin oxide coating.

44-48. (Cancelled)

49. (Withdrawn) A method for making touch panel spacer dots comprising:

providing a touch panel substrate comprising a plurality of spacer dots;

inspecting the substrate for missing or damaged spacer dots; and

ink jet printing material to fill in or repair a missing or damaged spacer dot identified in the inspecting step.

50-51. (Cancelled)

52. (Previously Presented) A method for making a touch activated user input device comprising:

providing a first substrate comprising a first conductive coating;

ink jet printing a gel composition to define a plurality of dots on the first conductive coating;

hardening the dots to form spacers adhered to the first substrate; and

placing a second substrate comprising a second conductive coating over the first substrate such that the spacers maintain a distance between the first and second substrates to prevent detection of a touch location when no external force is applied and allow detection of a localized touch location when a sufficient localized external force is applied between the first and second substrates.

53. (Previously Presented) The method of claim 52, wherein the gel composition comprises a nanocomposite gel including nanoparticles dispersed in an energy curable fluid vehicle.

54. (Previously Presented) The method of claim 53, wherein the nanoparticles comprises surface-modified silica nanoparticles.

55. (Previously Presented) The method of claim 53, wherein the nanoparticles have an average diameter in a range of about 10 to 30 nm.

56. (Previously Presented) The method of claim 52, wherein the gel composition comprises hexanediol diacrylate.

EVIDENCE APPENDIX

All of the evidence related to this Appeal is on the record and before the Board. Therefore, no additional evidence is identified in this Appendix.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings to be considered in this Appeal. Therefore, no such proceedings are identified in this Appendix.